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Sensory preference of fiber enriched wheat breads, correlation with color and crumb structure

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Statement of the Problem: There is a growing interest in the incorporation of functional ingredients on bread to reply consumer's demands on healthy nutrition. The fiber enrichment of bread is an interesting possibility due to health benefits associated with increase of fiber intake. Potential sources of dietary fiber are agroindustry by-products, such as orange, pomegranate, elderberry peels and spent yeast. However, fiber enrichment of bread may compromise its organoleptic characteristics. Therefore, the major goal of this study is to select the concentrations of fiber rich extracts with best acceptance by consumers and understand the relationships between sensory and instrumental data.

Materials & Methodology: Nine different bread formulations were produced with addition of fiber extracts (% wheat flour): elderberry (5.0%, 7.0%, 10.0%), orange (2.5%, 7.0%), pomegranate (5.0%, 7.0%, 10.0%), yeast (2.5%). For control (C) bread, no extract was added. A sensory panel composed by 13 members was trained for descriptive analysis according to the guidelines in the ISO 8586 (2012). Sensory acceptability tests were carried out, with 60 non-trained members. Statistical models for sensory preference evaluation and correlation with color and crumb structure were developed.

Findings: External preference mapping indicated consumer preferences and enabled selection of the concentrations of fiber with best acceptance, namely 7.0% elderberry, 2.5% orange, 5.0% pomegranate, and 2.5% yeast. Data collected from image analysis complemented sensory profile information, whereas multivariate PLS regression provided information on the relationship between sensory and instrumental data. Regression models developed presented good fitting (R2Y>0.700) and predictive ability (Q2>0.500).

Conclusion & Significance: The results of the present study indicate that fiber extracts obtained from orange, pomegranate, elderberry peels, interior membranes and seeds and spent yeast have potential application as bread ingredients. However, the concentrations of each fiber rich extracts with best acceptance by consumers must be carefully selected.

Biography

Olivia Pinho is a researcher from LAQV/REQUIMTE and Full Professor at the Faculty of Nutrition and Food Science from the University of Porto. She has her expertise in food safety development and optimization of chemical and biochemical methodologies to be applied to nutrients and improvement of food manufacturing processes and cooking to promote consumer's health. As a Nutritionist, she has also experience in studies related with food consumption habits.

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